pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHEAST REGIONAL OFFICE

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DATE January 27, 2017

RE RACT II
Braskem America, Inc.
Marcus Hook Borough, Delaware County
Application No. 23-00012
APS ID: 687816; AUTH ID: 1160332

On November 14, 2016, the Department of Environmental Protection (DEP) received a significant Title V Operating Permit (TVOP) modification application from Braskem America, Inc. (Braskem) for its polypropylene manufacturing plant located at 750 West 10Th Street, Marcus Hook Borough, Delaware County.

Facility Information

The facility is major for VOC emissions and subject to 25 Pa. Code §§129.96 through 129.100.

The following are the sources listed in the current TVOP and type of RACT II each source is subject to:

Source Name (Source ID)	*Emissions/Control Devices*	*RACT II*
Plant 1 Three Storage Silos (101A)	Stack (S01)	Case-by-case
Plant 2, Three Storage Silos (101B)	Stack (S02)	Case-by-case
Plant 1 Polypropylene MFG Sources (102A)	Flare (C02)	Case-by-case
Plant 2 Polypropylene MFG Sources (102B)	Flare (C02)	Case-by-case

Plant 1 Fugitive Sources (103A)	Fugitives (Z01)	Exempt
Plant 2 Fugitive Sources (103B)	Fugitives (Z02)	Exempt
Maintenance Parts Washer (105)	Fugitives (Z03)	Exempt
Propylene Splitter Process & Cavern 4 (106)	Flare (C100)	Case-by-case
	Fugitives (Z106)	Exempt
Propylene Unloading Rack (107)	Flare (C100)	Case-by-case
	Fugitives (Z107)	Exempt
Engines (2) to power fire pumps (108)	Stack (S108)	Presumptive
Flares (C02 and C100)		Presumptive

Flare (C100) is located in Delaware State, and owned and operated by Sunoco Refinery.

RACT II

Sources Exempt from RACT II

As per 25 Pa. Code §129.96(a)-(b), the RACT II Rule does not apply to an emissions source for which a requirement or emissions limitation, or both, has been established in 25 Pa. Code §§129.51 – 129.52c, 129.54 – 129.69, 129.71 – 129.73, 129.75, 129.77, 129.101 – 129.107 and 129.301 – 129.310. Emissions sources at Braskem, which are subject to one or more of the specified Chapter 129 standards, are summarized in Table 1. These sources are not subject to the RACT II Rule.

Table 1 – Sources with requirement or emission limitations established in 25 Pa. Code §129

Source ID	Source ID Source Description	Applicable 25 Pa. Code §129 Standards
103A	Plant 1 Fugitive Sources	§129.71
103B	Plant 2 Fugitive Sources	§129.71
105	Maintenance Parts Washer	§129.63
106	Propylene Splitter Process & Cavern 4 (Fugitive emissions)	§129.71
107	Propylene Unloading Rack (fugitive emissions)	§129.71

Presumptive RACT Sources

The facility has two VOC emitting sources that will comply with the applicable presumptive RACT requirement as specified in 25 Pa. Code §129.97(c) - install, maintain and operate the source in accordance with the manufacturer's specifications and with good operating practices.

Table 2 – Sources complying with presumptive RACT

ID	Source Description	VOC Emissions	RACT II Citations
108	Fire Water Pump Engines	Work practices	§129.97(c)(5)
C02	Flare System	Work practices	§129.97(c)(6)

Alternative RACT Sources

Table 3 lists the sources that will comply with case-by-case RACT II and the condition #s specified in the draft TVOP.

Table 3 – Summary of Source complying with Alternative RACT (25 Pa. Code §129.99 Case-by-Case)

ID	Source Description	RACT II Determination	RACT Requirements	RACT Conditions to be Added to the SIPped
101A	Plant 1 Three (3) Storage Silos	Comply with VOC emission limit with monitoring and recordkeeping requirements	Emission Restrictions	#002
			Monitoring Requirements	#003
			Recordkeeping Requirements	#004
101B	Plant 2 Three (3) Storage Silos		Emission Restrictions	#002
			Monitoring Requirements	#004
			Recordkeeping Requirements	#005
102A	Plant 1 Polypropylene Manufacturing Sources	Comply with 40 CFR Part 60, Subpart DDD requirements	Control Device Efficiencies	#002
			Monitoring Requirements	#005
			Recordkeeping Requirements	#007
102B	Plant 2 Polypropylene Manufacturing Sources		Control Device Efficiencies	#003
			Monitoring Requirements	#006
			Recordkeeping Requirements	#008
106	Propylene Splitter Process and Cavern 4		Restrictions	#001
			Recordkeeping Requirements	#008
107	Propylene Unloading Rack		Restrictions	#002
			Recordkeeping Requirements	#009

Feasibility Analysis for Case-by-Case Sources

Source ID 101A/101B – Storage Silos

The VOC emissions from the storage silos are limit to 12.1 tons per year for Source ID 101A, and 4.63 tons per year for Source ID 101B. The following table shows the available and feasible technologies for the silos. The cost effectiveness is calculated based on the VOC emission limit for each source.

Tech Available	Feasibility	101A	101B	Cost effectiveness	
		$/Ton	$/Ton	101A	101B
Thermal oxidation	Yes	17,424	47,864	No	No
Thermal oxidation with concentrator	Yes	21,318	58,563	No	No
Catalytic thermal oxidation	Yes	16,460	45,217	No	No
Adsorption	Yes	21,667	37,635	No	No

Using the existing flare is technically infeasible, because the silo exhaust gases comprise of primarily oxygen and minimal amounts of VOC. The existing flare header system is designed for use of inert carrier gases (nitrogen).

Question was raised to the feasibility for the silos to share a common control device. Braskem responded as follows:

> *The silos can operate independently of each other. The independent operation requires that each silo maintain its own control device due to flow turndown concerns of a shared control device (i.e., the control device would be sized 50% too large if one silo was not in operation, which would lead to control inefficiencies).*

RACT for the storage silos are the VOC emission limits of 12.10 tons per year for Source ID 101A and 4.63 tons per year for Source ID 101B, plus monitoring and recordkeeping requirements.

Source ID 102A 102B – Polypropylene Manufacturing Sources

The continuous and intermittent VOC emissions from both PP manufacturing plants are currently sent to the flare (Source ID C02). This control has the highest efficiency among the feasible technologies for the source category.

RACT for these sources are to comply with the provisions of 40 CFR 60 Subpart DDD and 25 PA. Code §§129.99 and 129 100.

Source ID 106 – Propylene Splitter Process and Cavern 4
Source ID 107 – Propylene Unloading Rack

The continuous and intermittent VOC emissions from both sources are currently sent to the flare (Source ID C100) owned and operated by Sunoco and located in Delaware State. This control has the highest efficiency among the feasible technologies for the source category.

RACT for these sources are to comply with the provisions of 40 CFR 60 Subpart DDD and 25 PA. Code §§129.99 and 129 100.

Regulatory Review

1. ***25 Pa. Code §§127.413, 172.462(b) and (c), and 127.521 - Public Notice***

Braskem sent notices to the following government states and municipalities:

Marcus Hook Borough
Delaware County
Delaware State
New Jersey State
EPA Region III

To be updated.

Recommendation

To be updated.